

Claims

1. A diverter valve adapted to be received within a faucet assembly having at least one water inlet, a spout outlet and a spray outlet, said diverter valve comprising:
 - a cylindrical valve sleeve having a sleeve wall communicating at an upper end thereof with said spout outlet, at a lower end thereof with said spray outlet, and along a central portion thereof with said water inlet, said sleeve defining a plurality of first inlet ports and a plurality of second inlet ports both communicating with said water inlet, a spout valve seat defined in said sleeve wall, a spray valve seat defined in said sleeve wall, and a plurality of flow regulating grooves defined in said sleeve wall; and
 - a cylindrical valve plunger having a plunger wall dimensioned to slide axially with close clearances within said sleeve and defining a transfer chamber within the plunger wall, said plunger having a lower valve head arranged to seal the spray valve seat when the plunger is in an upper axial position, said plunger having an upper valve head arranged to seal the spout valve seat when the plunger is in a lower axial position, a plurality of third and fourth axially spaced ports defined in the plunger wall and communicating with said transfer chamber, said third and fourth ports being arranged to admit water from the first inlet ports into the transfer chamber and from the transfer chamber to the spout outlet when the plunger is in the upper position and to be blocked when the plunger is in the lower position, said second inlet ports being arranged to admit a screened flow of water between the sleeve and plunger to the spray outlet, said lower valve head being adapted to cooperate with said flow regulating grooves to regulate said screened flow when the plunger is in the lower position.
2. The diverter valve according to claim 1, wherein said sleeve wall has a smaller diameter wall portion forming close clearances with the plunger wall and a larger diameter wall portion defining an annular space with the plunger wall, said second inlet ports directing said screened flow into said annular space.

3. The diverter valve according to claim 1, wherein said lower valve head is fitted with an O-ring, and wherein said flow regulating grooves comprise a plurality of circumferentially spaced axially extending grooves defined in said sleeve wall between said spray valve seat and the lower end of said valve sleeve, the O-ring being dimensioned to regulate flow by bulging into said grooves when subjected to a pressure differential thereacross.
4. The diverter valve according to claim 1, wherein said upper valve head is fitted with an O-ring arranged to seat on the spout valve seat and seal flow to the spout outlet when the plunger is in a lower axial position.
5. The diverter valve according to claim 1, wherein said lower valve head is fitted with an O-ring arranged to seat on the spray valve seat and seal flow to the spray outlet when the plunger is in the upper position, and wherein said same O-ring is arranged and dimensioned to cooperate with said flow regulating grooves to regulate said screened flow when the plunger is in the lower position.
6. The diverter valve according to claim 5, wherein said flow regulating grooves comprise a plurality of circumferentially spaced axially extending grooves defined in said sleeve wall between said spray valve seat and the lower end of said valve sleeve, the O-ring being dimensioned to regulate flow by bulging into said grooves when subjected to a pressure differential thereacross.
7. The diverter valve according to claim 1, wherein said second inlet ports are substantially axially directed and circumferentially spaced around said sleeve and are so dimensioned to screen and trap particulate material of a size large enough to become entrapped in said flow regulating grooves.
8. The diverter valve according to claim 1, wherein said first inlet ports are substantially radially directed and circumferentially spaced around the valve sleeve,

and wherein said second inlet ports are substantially axially directed and circumferentially spaced around the valve sleeve.

9. A diverter valve adapted to be received within a faucet assembly having at least one water inlet, a spout outlet and a spray outlet, said diverter valve comprising:
- a cylindrical valve sleeve having a sleeve wall defining a central passage therethrough, said central passage communicating at an upper end thereof with said spout outlet and at a lower end thereof with said spray outlet, a central wall portion of said sleeve wall communicating on the outer surface thereof with said at least one water inlet, said central wall portion having a plurality of substantially radially directed inlet ports and a plurality of substantially axially directed inlet ports, a spout valve seat at the upper end of said central passage, a spray valve seat axially spaced from said spout valve seat on the other side of said central wall portion, and a plurality of circumferentially spaced flow regulating grooves defined in said sleeve wall between the spray valve seat and the lower end of the central passage; and
 - a cylindrical valve plunger having a plunger wall dimensioned to slide axially with close clearances within said sleeve wall, said plunger having a transfer chamber closed at opposite axial ends of said plunger wall, a lower valve head arranged to seal the spray valve seat when the plunger is in an upper axial position, an upper valve head arranged to seal the spout valve seat when the plunger is in a lower axial position, a plurality of plunger inlet ports and a plurality of plunger outlet ports defined in the plunger wall and communicating with said transfer chamber, said plunger inlet ports and plunger outlet ports being axially spaced from one another and arranged to register with the upper end of the central passage and with said radially directed inlet ports respectively when the plunger is in said upper position so as to admit water from the water inlet through the transfer chamber to the spout outlet, and to be blocked when the plunger is in said lower position, said axially directed inlet ports being arranged to screen and admit a screened flow of water between the sleeve and plunger to the spray outlet, said lower valve

head being adapted to cooperate with said flow regulating grooves to regulate said screened flow when the plunger is in the lower position.

10. The diverter valve according to claim 9, wherein said sleeve central wall portion is of a smaller diameter forming close clearances with the plunger wall and wherein said sleeve has a larger diameter wall portion defining an annular space with the plunger wall, said axially directed inlet ports directing said screened flow into said annular space.

11. The diverter valve according to claim 9, wherein said lower valve head is fitted with an O-ring, the O-ring being dimensioned to regulate flow by bulging into said grooves when subjected to a pressure differential thereacross.

12. The diverter valve according to claim 9, wherein said upper valve head is fitted with an O-ring arranged to seat on the spout valve seat and seal flow to the spout outlet when the plunger is in the lower position.

13. The diverter valve according to claim 9, wherein said lower valve head is fitted with an O-ring arranged to seat on the spray valve seat and seal flow to the spray outlet when the plunger is in the upper position, and wherein said same O-ring is arranged and dimensioned to cooperate with said flow regulating grooves to regulate said screened flow when the plunger is in the lower position.

14. The diverter valve according to claim 9, wherein said axially directed inlet ports are circumferentially spaced around said sleeve and are so dimensioned to screen and trap particulate material of a size large enough to become entrapped in said flow regulating grooves.